

# Additional information

## Megha-Tropiques satellite project

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*with support of*



*and*



# Megha-Tropiques scientific objectives

**Atmospheric energy budget in the intertropical zone and at system scale (radiation, latent heat, ...)**

- **Water budget of the systems (including precipitation and water vapor transport)**
- **Conditions of appearance and development of these systems (Surface temperature, water vapor, winds,...)**
- **Life cycle of Mesoscale Convective Complexes in the Tropics (over Oceans and Continents)**

# Megha-Tropiques additional objectives

## Operational aspects :

**Monitoring and assimilation for Cyclones, Monsoons, Mesoscale Convective Systems forecasting. (water vapour and **precipitation**)**

## Contribution to climate monitoring :

- *Radiative budget (complementary to CERES)*
- ***Precipitation** (enhanced sampling in the tropics)*
- *Water vapour (tropical sampling)*

# Megha-Tropiques orbit

## Megha-Tropiques Trace de l'orbite

Phasage = [14; -1; 7] 97

>>> Durée représentée : 1440.0 mn = 1.00 j

Altitude = 865.6 km

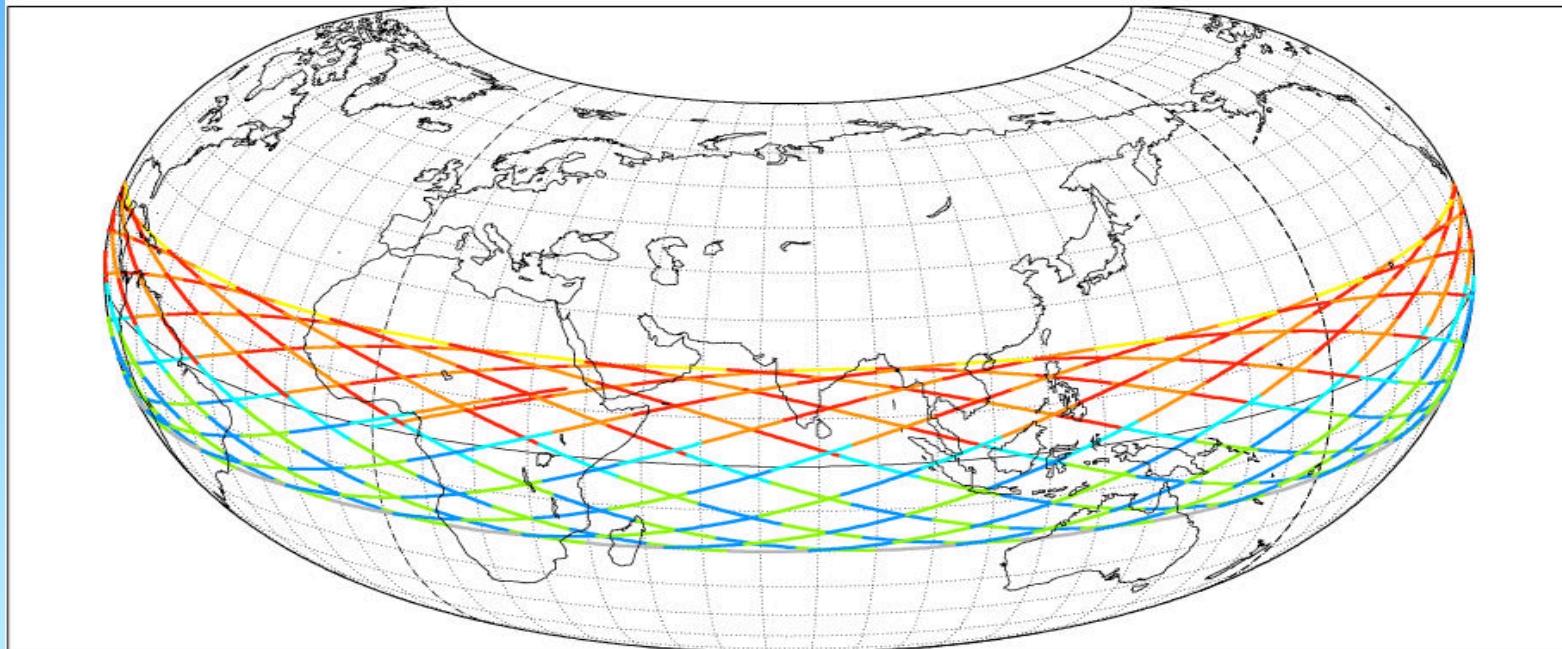
a = 7243.700 km

Inclinaison = 20.00 °

Période = 101.93 mn \* Tours/j = 14.13

Décalage à l'équateur = 2892.0 km ( 26.0 °)

T.S.M. 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 h (locales)



Projection : Raisz Armadillo

Propriété : (sans)

Type : (divers)

C.C.: 0.0 ° ; 75.0 °E / 28.1 °N; 75.0 °E

Aspect : Direct

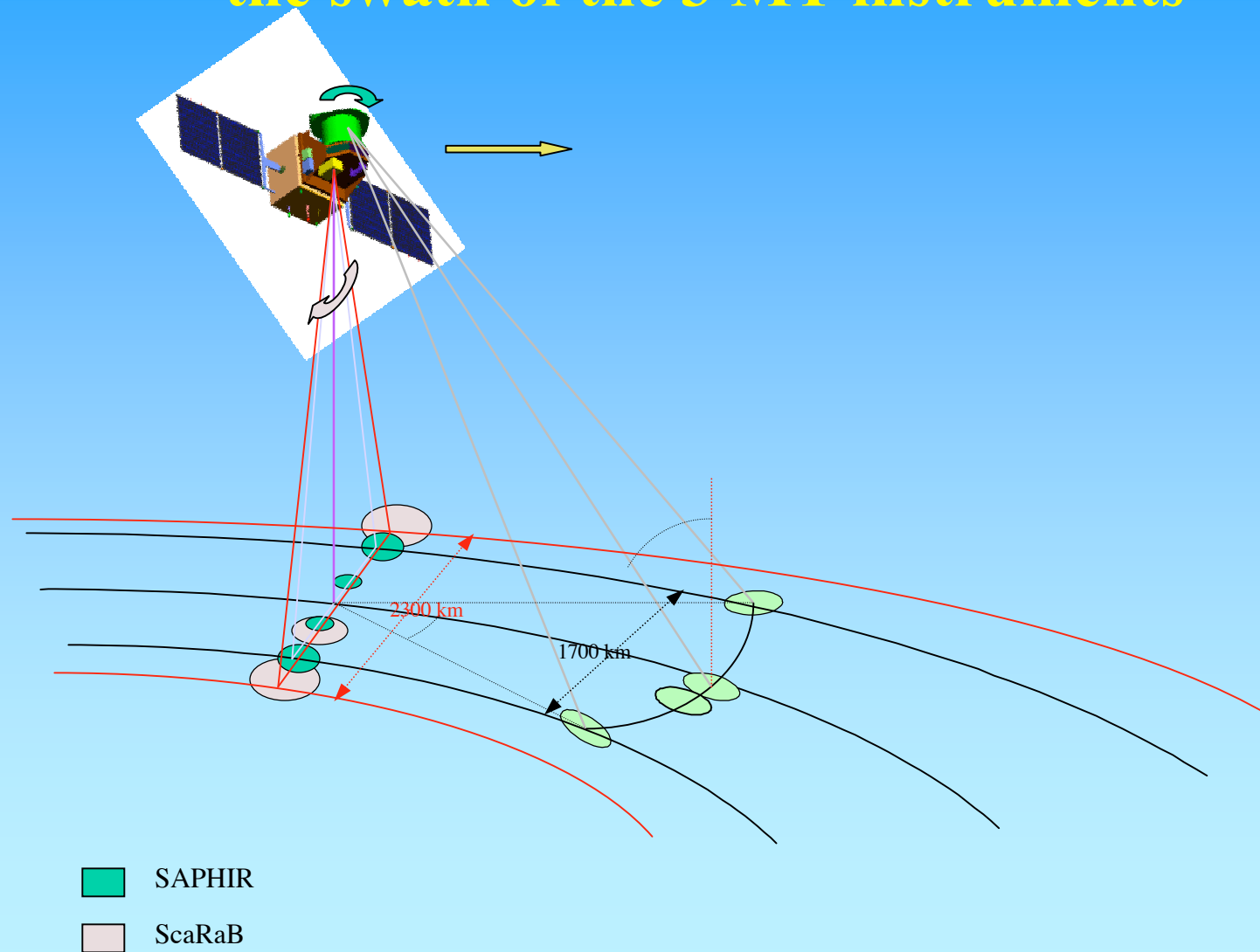
[ +90.0 / +0.0 / -165.0 ]

N. asc. : 0.00 ° [06:00 TSM]

Inclin. app. = 21.52 °

*Ιξίων*  
**MC ★ LMD**  
*Ατλας*

# Schematic representation of the swath of the 3 MT instruments



## Contribution of MT to precipitation determination

Megha-Tropiques was not designed specifically for precipitation measurements

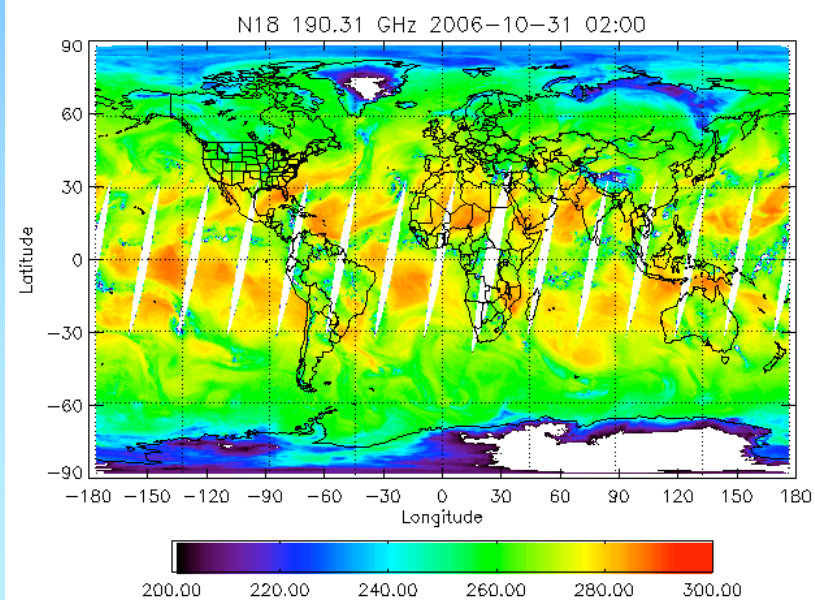
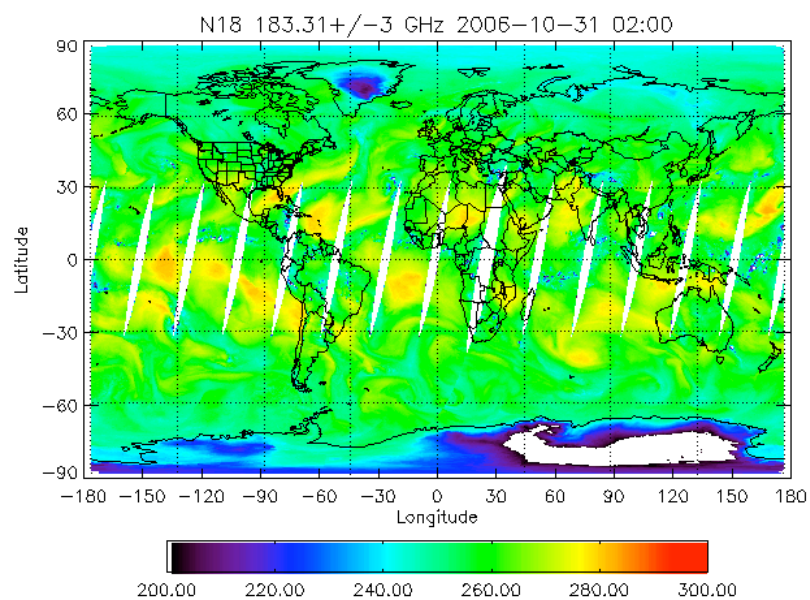
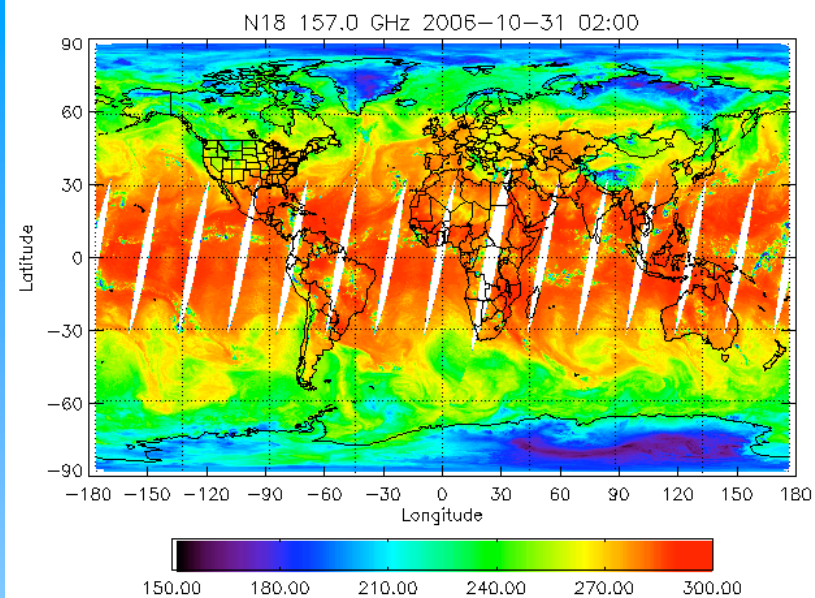
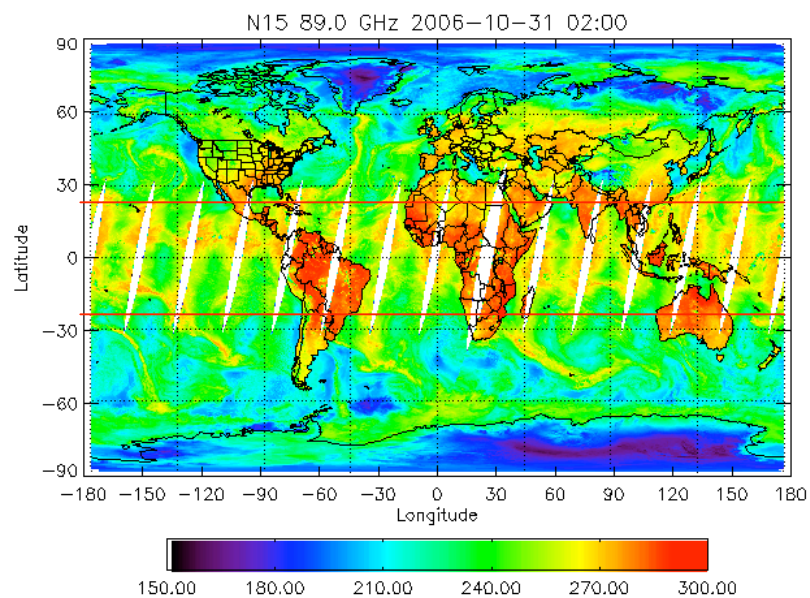
The new features of Madras include the presence of a 157 Ghz dual polarization channel. Saphir channels add complementary information, specially for precipitation over land. Combination of the two instruments has to be worked on.

The time sampling is better than for any other microwave instruments, and will be still better when associated to other satellites.

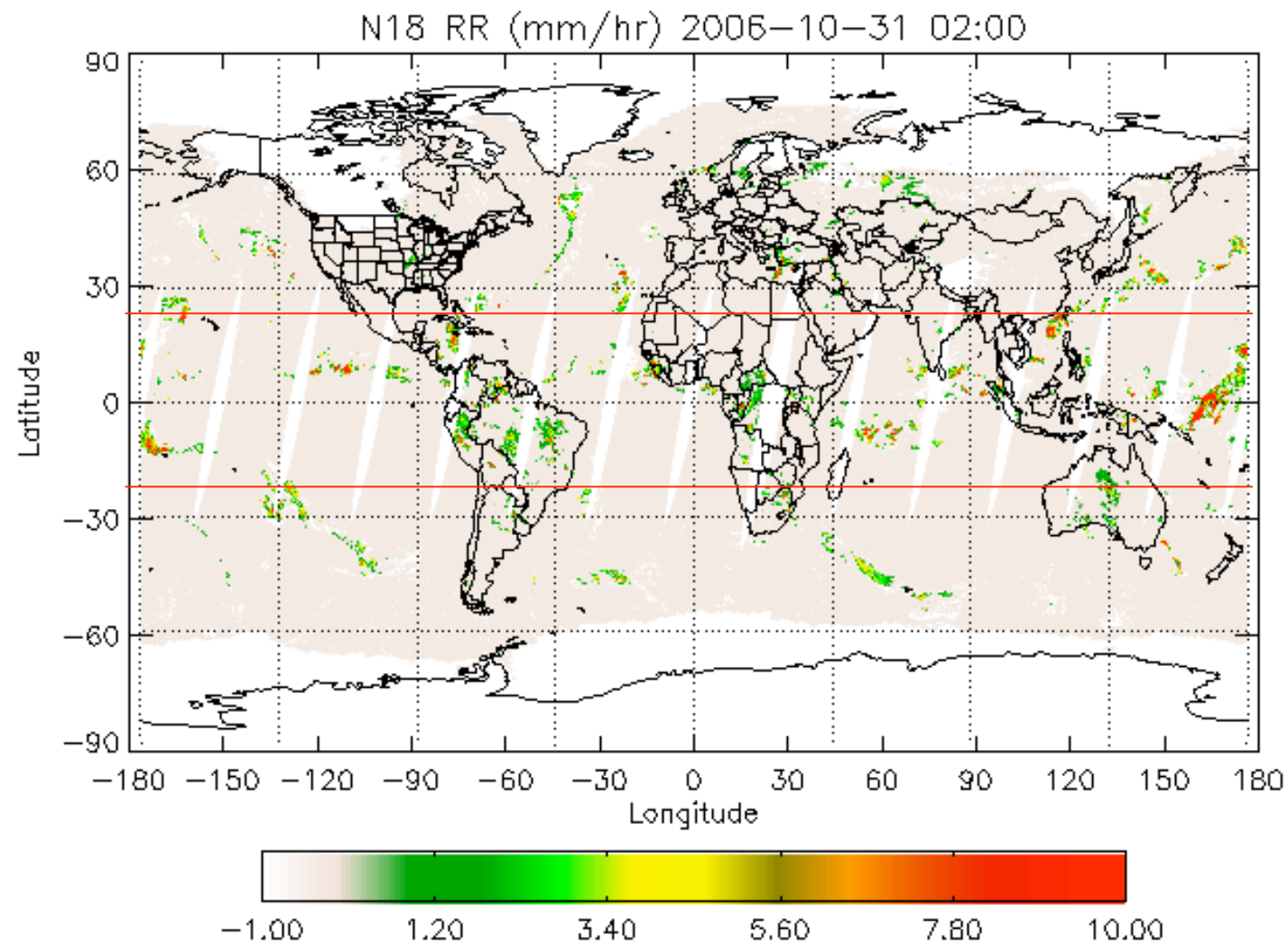
Sampling of the diurnal cycle is very specific with this orbit, and time cumulations have to be adapted to that sampling



# NOAA 18 MHS



## NOAA 18 Rainrate





## Contribution of Megha-Tropiques to GPM

Megha-Tropiques will come before the GPM core satellite, hopefully before the end of TRMM

Unique association of a microwave imager and a sounder in tropical orbit

International science team. AO foreseen in 2007

Issue of data distribution : French team favourable to open distribution after validation phase, to be included in the CNES-ISRO data protocol

Issue of real time access for tropical cyclones monitoring and assimilation in forecast models : Need of a second receiving station to get all the orbits in near real time. Recommendation of IPWG Melbourne.

## Megha-Tropiques Trace de l'orbite

Phasage = [14; -1; 7] 97

>>> Durée représentée : 1440.0 min = 1.00 jour

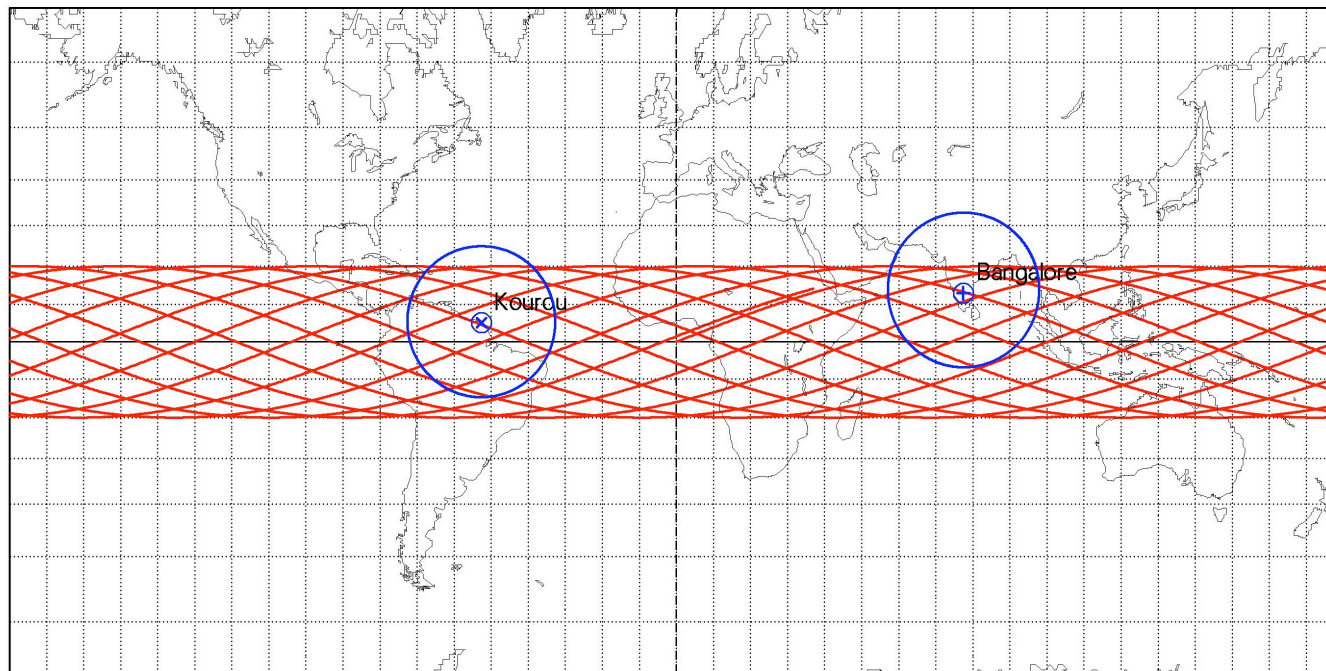
Altitude = 865.5 km

a = 7243.678 km

Inclinaison = 20.00 °

Période = 101.93 min \* Révol./j.=14.13

**Cercle de visibilité pour h = 10°**



Projection : Mercator

Propriété : Conforme

⊕ T.:Cylindrique - Grille : 10°

Centre Project.: 0.0 ° ; 0.0 °

Aspect : Direct

{4.2}[+90.0/ +0.0/ -90.0] [-] GEM-T2

Noeud asc. : 0.00 °

Inclin. app. = 21.52 °

Ιξίων

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## Satellite telemetry stations - Band S. Data rate < 1 MB/s.

### Megha-Tropiques Trace de l'orbite

Phasage = [14; -1; 7] 97

>>> Durée représentée : 1440.0 min = 1.00 jour

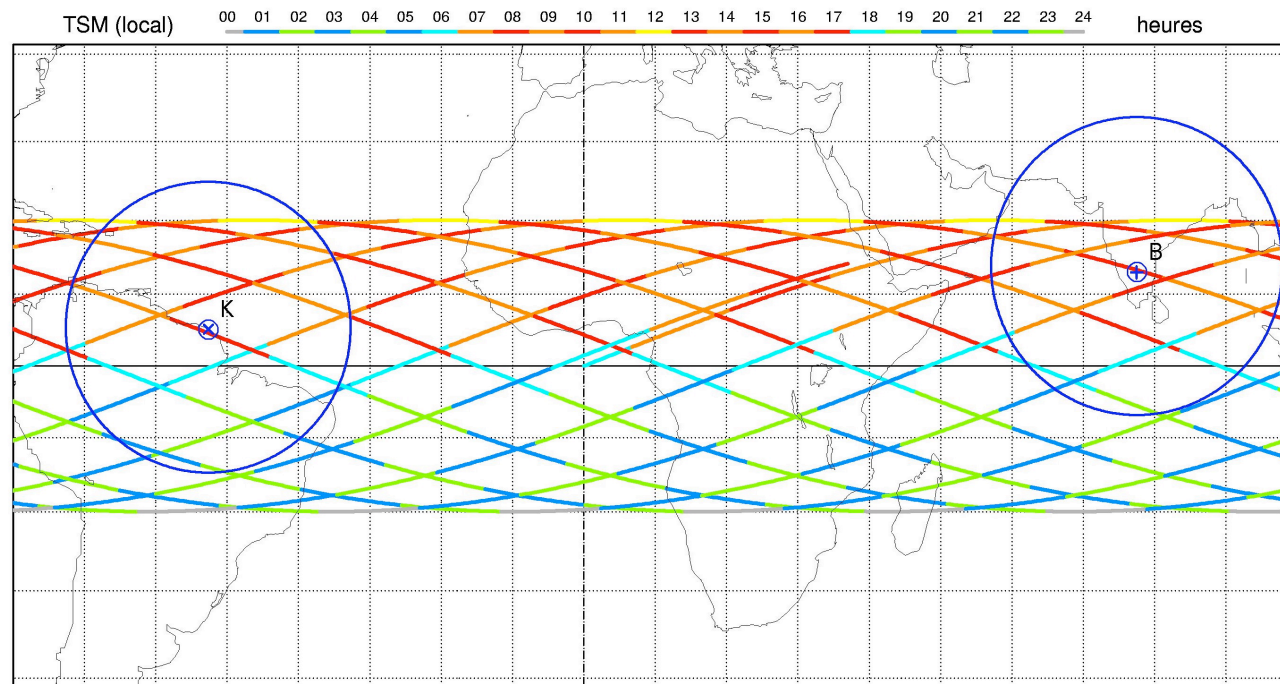
Altitude = 865.5 km

a = 7243.678 km

Inclinaison = 20.00 °

Période = 101.93 min \* Révol./j.=14.13

**Cercle de visibilité pour h = 10°**



Projection : Mercator

Propriété : Conforme

⊕ T.:Cylindrique - Grille : 10°

CP: 0.0 ° ; 0.0 ° /CZ: 0.0 ° ; 10.0 ° E

Aspect : Direct > **zoom : 2.00**

{4.2} [ +90.0/ +0.0/ -90.0 ] [-] GEM-T2

Noeud asc. : 0.00 ° [06:00 TSM]

Inclin. app. = 21.52 °

Ιξίων

**MC ★ LMD**

Ατλας